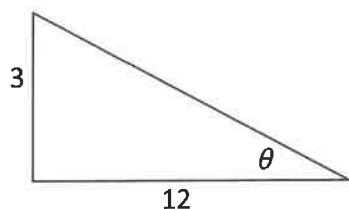


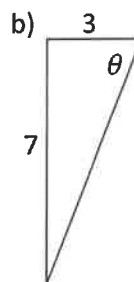
1. State the value of
- $\tan \theta$
- in each right triangle: (1 mark each)

a)



$$\tan \theta = \frac{3}{12} = \frac{1}{4}$$

b)



$$\tan \theta = \frac{7}{3}$$

2. Use your calculator to determine each tan ratio to 4 decimal places: (1 mark each)

a) $\tan 82^\circ = \underline{7.1154}$

b) $\tan 52.8^\circ = \underline{1.3175}$

3. Use your calculator to determine the value
- θ
- to the nearest tenth: (1 mark each)

a) $\tan \theta = 0.1841$

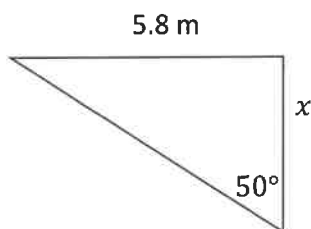
$$\theta = \underline{10.4^\circ}$$

b) $\tan \theta = \frac{5}{3}$

$$\theta = \underline{59.0^\circ}$$

4. Determine the designated side length or angle to the nearest tenth: (2 marks each – show all work)

a)

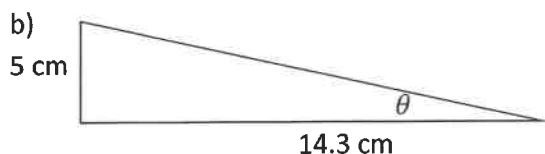


$$\tan 50 = \frac{5.8}{x}$$

$$x = \frac{5.8}{\tan 50} = 4.9 \text{ m}$$

$$\boxed{4.9 \text{ m}}$$

b)

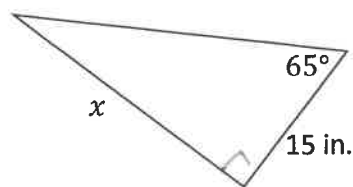


$$\tan \theta = \frac{5}{14.3}$$

$$\theta = \tan^{-1}(5 \div 14.3) = 19.3^\circ$$

$$\boxed{19.3^\circ}$$

c)

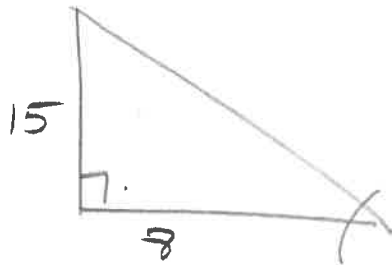


$$15 \cdot \tan 65^\circ = \frac{x}{15} \cdot 15$$

$$\boxed{32.2 \text{ in}}$$

5. Solve each problem. Include a diagram, show all work, and round to the nearest hundredth.
(3 marks each)

- a) A 15 m tall tree casts a shadow 8 m long. What is the angle with which the light from the sun hits the ground?



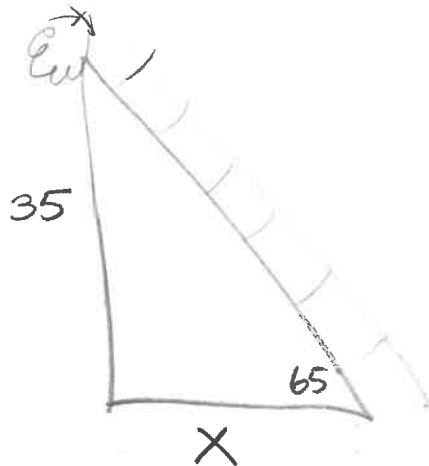
$$\tan \theta = \frac{15}{8}$$

$$\theta = \tan^{-1}(15 \div 8)$$

$$= 61.93^\circ$$

$$\boxed{61.93^\circ}$$

- b) For maximum safety, a ladder should be placed so that its base forms an angle of 65° with the ground. If you want to reach a tree branch 35 ft. high, how far from the base of the tree must you place the ladder?



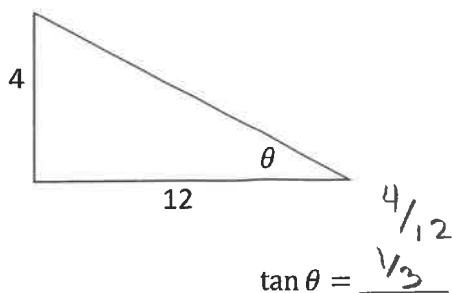
$$\tan 65^\circ = \frac{35}{x}$$

$$x = \frac{35}{\tan 65}$$

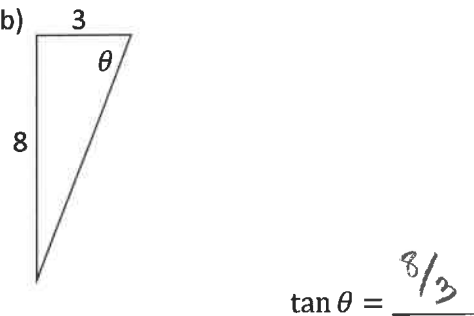
$$\boxed{16.32 \text{ ft}}$$

1. State the value of
- $\tan \theta$
- in each right triangle: (1 mark each)

a)



b)



2. Use your calculator to determine each tan ratio to 4 decimal places: (1 mark each)

a) $\tan 28^\circ = \underline{0.5317}$

b) $\tan 62.8^\circ = \underline{1.9458}$

3. Use your calculator to determine the value
- θ
- to the nearest tenth: (1 mark each)

a) $\tan \theta = 0.7157$

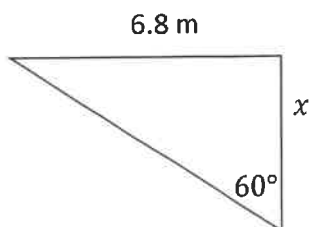
$\theta = \underline{35.6^\circ}$

b) $\tan \theta = \frac{7}{3}$

$\theta = \tan^{-1}(7 \div 3) = \underline{66.8^\circ}$

4. Determine the designated side length or angle to the nearest tenth: (2 marks each – show all work)

a)

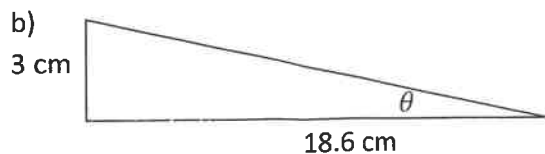


$$\tan 60 = \frac{6.8}{x}$$

$$x = \frac{6.8}{\tan 60}$$

$\underline{3.9 \text{ m}}$

b)

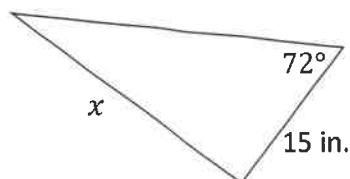


$\tan \theta = \frac{3}{18.6}$

$\theta = \tan^{-1}(3 \div 18.6)$

$\underline{9.2^\circ}$

c)

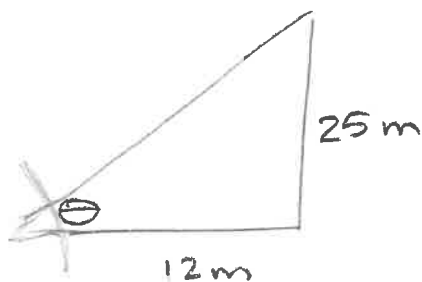


$$15 \cdot \tan 72 = \frac{x}{15}$$

$\underline{46.2 \text{ in}}$

5. Solve each problem. Include a diagram, show all work, and round to the nearest hundredth.
(3 marks each)

a) A 25 m tall tree casts a shadow 12 m long. What is the angle with which the light from the sun hits the ground?

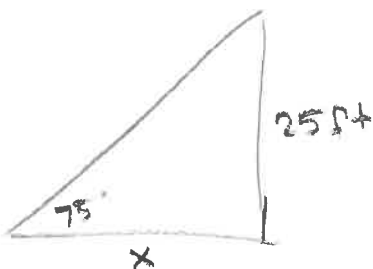


$$\tan \theta = \frac{25}{12}$$

$$\theta = \tan^{-1}(25 \div 12)$$

$$\underline{64.36^\circ}$$

b) For maximum safety, a ladder should be placed so that its base forms an angle of 75° with the ground. If you want to reach a tree branch 25 ft. high, how far from the base of the tree must you place the ladder?



$$\tan 75 = \frac{25}{x}$$

$$x = \frac{25}{\tan 75}$$

$$\underline{6.70 \text{ ft}}$$